Replacing Mercury Reagents in the Lab
Compiled by INFORM, Inc.
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There are many resources for those who wish to reduce the use of mercury fixatives and mercury preservatives in the laboratory, including:

- Resources related to determining which products contain mercury.
- Links to Listserv postings by histologists who have switched to mercury-free substitutes for B-5 fixative, Zenker's solution, and PVA parasitology transport vials.
- Publications on this topic.
- Contact information for laboratory personnel willing to share their experience on this topic.

Resources Related to Determining Which Products Contain Mercury

- Thimerosal is a commonly-used mercury preservative, but it can be called by many names. See http://cerhr.niehs.nih.gov/CERHRchems/Thimerosal.html for a list of Thimerosal synonyms.
- Dana Farber Cancer Center surveyed their vendors to determine which antibody products contained mercury. See:
    - http://research.dfci.harvard.edu/ehs/mercury_at_dfci.htm, which includes a link to a list of companies that use Thimerosal as preservative in HRP solutions and antibodies
    - http://research.dfci.harvard.edu/ehs/think_before_using_the_sink, which includes a list of companies that do not use Thimerosal or other mercury preservatives
    - For more information on the compilation of these lists, contact Melissa K. McCullough, MS, CHMM, Dana Farber Cancer Center, Melissa_McCullough@dfci.harvard.edu, (617) 632-2619.

Histonet Listserv Archives Postings

The Histonet listserver is a listserver for the Histology profession. Many postings appear in the archives where people discuss switching from mercury laboratory chemicals.

The main page for the Histonet Listserve Archives is at http://www.histosearch.com/histonet.html

Below are links to specific posts providing contact information for and opinions of people who have or are switching from mercury fixatives (B-5 and Zenker's):

- Jude Carpenter of FAHC Histopathology in Vermont posted just last January (2003) that they switched to zinc formalin from Anatech after testing 6

possible substitutes.
http://www.histosearch.com/histonet/Jan03/RE.B5Substitutes.html

- Bryan R. Hewlett of Hamilton Regional Laboratory Medicine Program in Ontario said in May 2002 that they were testing B-5 substitutes.
http://www.histosearch.com/histonet/May02/Re.B5B.html

- Scott Taft surveyed Histonet members on B-5 use and substitutes in October of 2001. Previous postings identified Scott's email address as ss336@yahoo.com. The results of his survey are posted at http://www.histosearch.com/histonet/Oct01/ResultsofB5fixativesurvey.html.

- Teri Johnson of the Stowers Institute for Medical Research in Missouri posted in October of 2001that they had already switched to zinc formalin.
http://www.histosearch.com/histonet/Oct01/Re.B-5fixativequestions.html

- Bob Richmond of Tennessee noted in September of 2000 that overnight fixation in formalin solution can replace fixing in mercury B-5.
http://www.histosearch.com/histonet/Sep00A/Re.EnteringthemercurydispC.html

- James Hall of University College London (rmkdhjh@ucl.ac.uk) posted in September of 2000 regarding an alternative Masson technique that does not require mercury.
http://www.histosearch.com/histonet/Sep00A/Massonalternative.html

- Sheila Tapper of SMDC Health System in Duluth, Minnesota (STapper@smdc.org) posted in August 1999 that they performed a blind study of various substitutes before deciding on B-Plus.
http://www.histosearch.com/histonet/Aug99A/RE.B-5SubstitutesA.html

- Cindy Higgerson of Memorial Hospital in Illinois (chiggerson@memhosp.com) posted in August of 1999 that they were switching from B-5 to a mercury-free alternative. http://www.histosearch.com/histonet/Aug99A/Re.B-5Substitutes.html

- Tim Morken of the CDC (tim9@cdc.gov) posted a protocol for switching in October of 1998 at http://www.histosearch.com/histonet/Oct98/Re.B-5FixativeSubstitutesD.html

Publications Related to Replacing Mercury Reagents

- A review of the merits, and mechanism and literature of zinc formalin: Dapson R., "Fixation for the 1990's," *Biotechnic & Histochemistry,* 1993, 68(2):75-82.

- Comparison of mercury PVA and alternatives: Jensen, B., et al., “Comparison of Polyvinyl Alcohol Fixative with Three Less Hazardous Fixatives for Detection and Identification of Intestinal Parasites,” *Journal of Clinical Microbiology*, April 2000, P. 1592-1598, Vol. 38, No. 4.

- Replacing mercury-containing laboratory chemicals in Duluth: Harvie, J., "Eliminating Mercury Use in Hospital Laboratories: A Step toward Zero Discharge," *Public Health Reports*, July/August 1999, 114(4):353-8. This article can be downloaded at http://noharm.org/details.cfm?type=document&id=256. The author's contact information has changed since this paper was published to Jamie Harvie, Institute for a Sustainable Future, 32 E. 1st Street, Suite 206, Duluth MN 55802, 218-525-7806, harvie@isfusa.org.

- “Improved Methods for Staining Fibrin”, Chuck Churukian, *Journal of Histotechnology*, in press June 2003.

- “The Manual of the Special Stains Laboratory,” 2002 Edition - $35.50, includes postage. Send check/money order to Department of Pathology, c/o Chuck Churukian; University of Rochester Medical Center; Box 626; Rochester NY 14642; You may contact Mr. Churukian at 585-275-1864 (FAX 585-273-1027, Churukian@aol.com)

Laboratories Willing to Share Their Experience

- Pierre Gonyon at Trinity Health/St. Joseph's in Ann Arbor posted an email to the H2E listserve in January of 2002 detailing how his hospital did a blind study comparing the mercury B-5 to the zinc and the histologists couldn't tell the difference. Protocol/product information for switching from B-5 to B-Plus fixative is available from him: Pierre Gonyon, Safety Department, Saint Joseph Mercy Health System, Ann Arbor, MI 48106, (734)712-3315, gonyonpl@trinity-health.org.

- Lisa Meyer of Fisher-Titus Medical Center (lmeyer@ftmc.com) switched several years ago.

- Crystal Sands of NorDx Laboratories (207-885-7807, sandsc@mmc.org) has been making these changes They replaced;
    - Mercury PVA after conducting a trial of 4 alternatives. In the clinical lab they replaced PVA with Zinc PVA. The lab conducted trials of SAF, Ecofix, Spin-Con and the Zinc PVA.
    - In Histology, they eliminated Zenkers completely. After two years and many product trials, including B Plus, Z5, B5 Fixative Substitute, and AZF, the pathologists agreed to switch from B5 to AZF.

- Deb Goodman, Housekeeping Supervisor at SSM Health Care (Debbie_Goodman@ssmhc.com) has reported that switching was easy, the

reagents did not cost more, and they saved on hazardous waste costs. They did side-by-side trials and retrained their technicians. The new reagents require fewer steps.